

NEWARK BAY STUDY AREA  
PRP DATA EXTRACTION FORM

SDMS Document



100672

***Mallinckrodt /MI Holdings, Inc.  
Jersey City, New Jersey Site***

**CANDIDATE PRP(S):**

**PRP: MI Holdings, Inc.** ["MI Holdings" (f/k/a AVP Holdings, Inc. [a/k/a Mallinckrodt, Inc. ( hereafter "Mallinckrodt, Inc. 2" since this is the 2nd entity to have used this same name)]) as Owner/Operator in its own right in and after March 1982, and as successor by merger to Mallinckrodt Chemical Works [a/k/a Mallinckrodt, Inc. ( hereafter "Mallinckrodt, Inc. 1" since this is the 1st entity to have used this name)], Owner/Operator prior to March 1982]

**CURRENT MAILING ADDRESS/CONTACT INFO:**

**PRP: MI Holdings, Inc.**  
Attn: Gilbert L. Klemann II, President  
1345 Avenue of the Americas  
New York, NY 10105-0196

BAC000013, BAC000027

**FACILITY ADDRESS:**

The facility that is the subject of this Data Extraction Form ("DEF") is located at:

223 West Side Avenue  
Jersey City, Hudson County, New Jersey

(referred to hereafter as the "Mallinckrodt/MI Holdings Site" or the "Site")

Tax records of the City of Jersey City also reference the Site as follows:

Block 1286 -	Lot 4B
Block 1286.5 -	Lots 1, 2 and 4A
Block 1287.2 -	Lots 2C and 2D

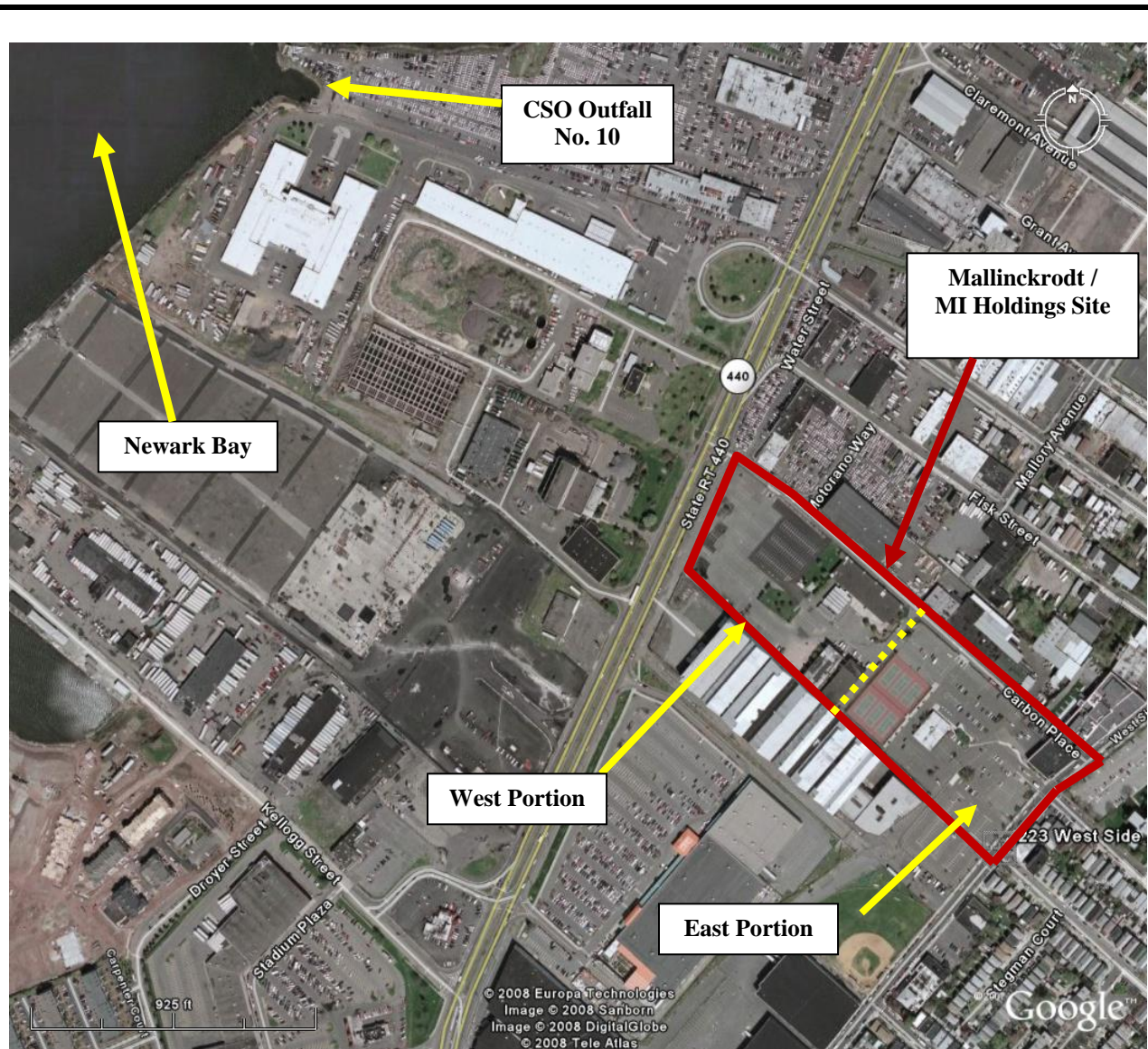
BAA000001, BAA000003, BAA000008, BAF000001

The Site is 11.65 acres in size and is bordered by: West Side Avenue on the southeast side; Carbon Place and property of the New Jersey City University (formerly Jersey City State College) on the northeast side; property of the former Baldwin Steel trucking operations and the

West Side Connecting Railroad on the southwest side; and New Jersey State Highway Number 440 ("Route 440") on the northwest side. Of note, certain regulatory documents indicate the Site as being approximately 12.5-acres in total size. BAA000008, BAB000001, BAF000003, BAF000004, BAF000007, BBA000001

Property and facilities of the City of Jersey City Department of Public Works, which includes the City of Jersey City Municipal Utilities Authority ("Jersey City MUA") sewage treatment plant, lie to the west of Route 440, near the northwest corner of the Site and extend to Newark Bay. The Route 440, Jersey City, NJ property of Honeywell International Inc. ("Honeywell") is situated to the west of Route 440, near the southwest corner of the Site and extends to Newark Bay. BAA000008, BAB000001, BAF000003, BAF000004, BBA000001

The approximate location of the Mallinckrodt/MI Holdings Site is shown on the following annotated aerial photograph:



**Mallinckrodt/MI Holdings Site**  
223 West Side Avenue  
Jersey City, Hudson County, NJ

Aerial Photograph Copyright Dated 2008  
Source: Google Earth (Europa Technologies/Sanborn/Digital Globe/Tele Atlas)

Annotated Site outline and location is an approximation

BAA000006, BAF000003

The overall Site generally is organized and discussed by reference to one or both of two sections, specifically an "eastern" portion and a "western" portion as follows:

- The eastern portion of the Site comprises a parcel of land that is approximately 5.5-acres in size. The eastern portion is bordered: on the southeast side by West Side Avenue; on the northeast side by Carbon Place and property of the New Jersey City University; on the northwest side by the western portion of the Site; and on the southwest side by the former Baldwin Steel property and the unrelated trucking operations.
- The western portion of the Site is reported to encompass 7 acres, and is bordered: on the northeast side by Carbon Place; on the southeast side by the eastern portion of the Site; on the northwest side by Route 440; and on the southwest side by the former Baldwin Steel property and the unrelated trucking operations.

BAA000008, BAB000001, BAF000003, BAF000004, BAF000007, BBA000001

**FINANCIAL VIABILITY** (annual revenue, # of employees):

An Annual Registration Statement, filed with the State of Missouri as of April 17, 2007, indicates the President of MI Holdings to be Gilbert L. Klemann II, with an address of 1345 Avenue of the Americas, New York, NY 10105. Of note, as of 2006, Gilbert L. Klemann II also is listed as Senior Vice President and General Counsel of Avon Products, Inc. ("Avon Products"), a New York corporation and the corporate parent of MI Holdings. MI Holdings continues to be listed as a subsidiary of Avon Products as of the 2006 and the 2007 SEC Form 10-K Annual Reports that were filed with the Federal Securities and Exchange Commission ("SEC") by Avon Products for the fiscal years ended December 31, 2006 and December 31, 2007 respectively. BAC000012, BAC000021, BAC000022, BAC000023, BAC000023A, BAC000027

Information obtained to-date does not provide financial information on MI Holdings. However, Avon Products, corporate parent of MI Holdings, reported total revenue for 2007 in the amount of \$9.9387 Billion. BAC000010, BAC000023, BAC000023A

**DATES OF OPERATION** (include info. on predecessors/successors if known):

Information obtained to-date provides the following information on the dates of operation for the subject PRPs at the Site:

- Mallinckrodt Chemical Works  
[a/k/a Mallinckrodt, Inc. (Mallinckrodt, Inc. 1)]: 1887 – March 1982
- MI Holdings, Inc. [f/k/a AVP Holdings, Inc.]  
and Mallinckrodt, Inc. (Mallinckrodt, Inc. 2),  
successor by merger to Mallinckrodt, Inc. 1]: March 1982 – Present

BAB000001, BAF000004

Information has been obtained on the following key dates in the corporate successorship and the history of the operations of Mallinckrodt/MI Holdings Jersey City facility:

1867-1882	Mallinckrodt, Inc. (Mallinckrodt, Inc. 1) was originally founded in 1867 as G. Mallinckrodt & Company. It subsequently was incorporated in St. Louis, Missouri in 1882 under the name of Mallinckrodt Chemical Works. BAB000001, BAC000005, BAC000006, BAF000004
1887	Mallinckrodt Chemical Works established its Jersey City, NJ, operations in 1887. BAB000001, BAC000005, BAC000006, BAF000004
1954	In 1954, Mallinckrodt Chemical Works went public, with its stock subsequently being traded on the American Stock Exchange. BAC000006, BAG000030
1960s-1970s	Throughout the 1960s and 1970s, the company's stock continued to be publicly traded under the name of "Mallinckrodt Chemical Works." BAC000006, BAG000030, BAG000033, BAG000044, BAG000054
1974	As of November 1974, Mallinckrodt Chemical Works had changed its name to Mallinckrodt, Inc. (i.e., Mallinckrodt, Inc. 1). At that time, the company was publicly traded under the new name of Mallinckrodt, Inc. BAG000055, BAG000056
1981-1982	On December 14, 1981, a company named AVP Holdings, Inc. ("AVP Holdings") was incorporated in the State of Missouri. AVP Holdings was indicated to be a wholly-owned subsidiary of Avon Products. In 1982, Mallinckrodt, Inc. was acquired by Avon Products. Articles of Merger were filed in Missouri on March 8, 1982, whereby Mallinckrodt, Inc. was merged into AVP Holdings; with AVP Holdings being the surviving corporation in the merger. It was noted in the Articles of Merger that the "Surviving Corporation shall have the name 'Mallinckrodt, Inc.', and shall possess all of the properties and rights and be subject to all of the liabilities of the Company and the Subsidiary and be governed by the laws of the State of Missouri." As of the March 8, 1982 merger, the corporate name of AVP Holdings, Inc. was amended and changed to Mallinckrodt, Inc. (i.e., Mallinckrodt, Inc. 2). BAC000024, BAC000024A, BAC000025, BAC000026
1986	A State of Missouri corporate filing dated January 2, 1986, indicates the corporate name of Mallinckrodt, Inc. was changed at that time to MI Holdings, Inc.
1993	Certain regulatory filings concerning the Site that were made in 1993 with the State of New Jersey Department of Environmental Protection ("NJDEP") by MI Holdings indicated MI Holdings to be a "wholly-owned subsidiary of Avon Products, Inc." BAA000003

**DESCRIPTION OF FACILITY OPERATIONS** (list CERCLA hazardous substances used, manufactured or present):

**Mallinckrodt/MI Holdings Site Operations:**

Please note that the use hereafter in this report of the defined term "Mallinckrodt" is in reference to the entity that operated under the name "Mallinckrodt Chemical Works" and then, following a name change as of 1974 to "Mallinckrodt, Inc.," under that new name.

Information sources indicate that Mallinckrodt operated at the Site from approximately 1887 through February 1982; and Mallinckrodt's successor, MI Holdings continued operating at the Site until the late 1980s - - (a) from March 8, 1982 until January 2, 1986, under MI Holdings' prior name, Mallinckrodt, Inc. [i.e., Mallinckrodt, Inc. 2, since it was the 2nd entity to use that same name]; and (b) from and after January 2, 1986, under its then new name, MI Holdings, Inc.. Historical operations conducted by Mallinckrodt and MI Holdings at the Site are reported to have included both chemical production and the wet and dry packaging of chemicals. BAB000001

**Pre-1940s:**

- Inorganic chemicals
- Iron oxides and salts, including ferrous sulfate and ferric chloride
- Mercury oxides and salts, including red mercuric oxide

**1940s and World War II Time Period:**

- Analytical chemicals
- Bichloride of mercury processing
- Medicinal chemicals
- Photographic chemicals
- Uranium trioxide (World War II)

**Post-World War II Time Period:**

- Acetone (packaging)
- Alcohols (packaging)
- Benzene (packaging)
- Ethers (packaging)
- Inorganic chemicals
- Iron oxides and salts, including ferrous sulfate and ferric chloride
- Mercury oxides and salts, including red mercuric oxide
- Mineral acids (packaging)
- Potassium chloride
- Potassium sulfate
- Sodium Nitrate
- Toluene (packaging)
- Xylenes (packaging)
- Zinc acetate

1980s Time Period:

- Calcium stearate dispersions
- Diagnostic chemicals
- Food preservatives
- Surfactants
- Zinc stearate dispersions

BAB000001, BAD000001, BAF000001, BAF000004, BAG000005, BAG000007

It had been reported that Mallinckrodt utilized its Jersey City facility as part of the "Manhattan Project" under contract with the United States government during the 1940s and World War II time period. At that time, other Mallinckrodt facilities nationwide had operations which utilized chemical processes for the purification of large quantities of uranium. The Jersey City operations during the 1940s and World War II time period centered on conversion of uranyl nitrate into uranium trioxide, as well as the testing of the uranium trioxide product. Information obtained to date also indicates that raw materials utilized in this process at the Jersey City facility included black uranium oxide. BAB000001, BAC000004, BAG000003, BAG000006, BAG000007, BAG000024, BAG000025, BAG000052

In 1959 it was reported that Mallinckrodt Chemical Works established a subsidiary called "Mallinckrodt Nuclear Corporation" to be involved with its uranium fuels processing program. BAG000009

Sanborn Fire Insurance maps, dated as of 1979 and 1988 respectively, show the Site operating under the name of Mallinckrodt Chemical Works and Mallinckrodt Chemical Company and situated with Route 440 to the west and West Side Avenue to the east. The 1988 Sanborn Fire Insurance map provides information on the historical operations at the Site, including identifying the following processing areas and infrastructure in existence at the Site at that time:

- Building A – Corrosive Subliming Room with storage, filling, packaging and an office
- Building B1 – Bottling
- Building B2 – Manufacturing
- Building C4 – Mercury Sulfate manufacturing and Calumel Subliming
- Building D5 – Iron Chloride Building
- Building E – MFG – 10 Gal Formite
- Building G – Manufacturing
- Building K – Warehouse
- Building L – Storage
- Building Q – Office, Laboratory & Storage
- Building R – Storage
- Building S – Storage. A gasoline tank is located on the east side of the building.
- Building T – Storage
- Building U – Storage
- Building V – Storage
- Building Z (also labeled as Building K5)
- Chemical Ware House/Chemical Ware House No. 4 – Built in 1951 and situated in northwest corner of the Site

BBS000001, BBS000002

The production of zinc stearate is known to have been discontinued at the Site in 1988.  
BAF000004

MI Holdings was reported to produce calcium stearate dispersions (aqueous) from raw materials that included the following:

- Stearic acid
- Calcium hydroxide
- Water

BAB000001, BAB000002, BAF000004

It was reported in 1987 that the MI Holdings operations at the Site consisted of 22 buildings during peak operations, occupying approximately 11 acres. BAB000002, BAF000001, BAF000004

According to a 1990 site investigation conducted for MI Holdings, buildings that were located and in operation in the eastern portion of the Site at that time included the following:

- One-story office building
- Building W – warehousing
- Building T – one story storage building
- Building U – Storage building removed in 1988
- Building V – Storage building removed in 1988

BAF000003, BBS000001, BBS000002

As of the 1990 site investigation, buildings and facilities located and in operation in the western portion of the Site at that time included the following:

- Building A – Demolished in the 1970s. Former manufacturing of mercury compounds.
- Building B – Demolished in the 1970s. Former manufacturing of mercury compounds.
- Building C/C-2 – Part of building C was demolished in the 1970s. Boiler and “cogen” facility. Former manufacturing of mercury compounds occurred in areas to south and east of Building C.
- Building E/E-1/E-2 – Manufacturing. Building E was demolished in the 1970s.
- Building G – Manufacturing. Demolished in the 1970s.
- Building J – Office building.
- Building K – Warehouse. Demolished in 1993
- Building L – Storage. Former shop.
- Building M – Chemical warehouse.
- Building N – Storage of small packets finished goods; storage of damage goods; storage of containers of alcohol, benzene, toluene and xylene



- Building Q – Office building.
- Building R – Storage.
- Building S – Demolished in the 1970s.
- Building X – Chemical warehouse.
- Building Y – Demolished prior to 1990.
- Building Z/Z-1 – Calcium stearate production.
- Loading docks – Demolished in 1993.

BAF000007, BBS000001, BBS000002

It was reported in 1990 that those locations that housed the former production of mercury compounds during the tenure of Mallinckrodt Chemical Works were the primary areas of environmental concern in the western portion of the Site. BAF000007

As of 1992, portions of the western areas of the Site, during its ownership/occupancy by MI Holdings, were reportedly leased and utilized by warehousing and truck-parking entities for the storage of food products. Eastern portions of the Site were reportedly leased and utilized for parking lots, an office building and tennis courts. BAB000001, BAB000002, BAF000004

In November 1993, plant operations were reported to be located in Building Z at the Site. It was also reported at that time that Building C served as a cogeneration plant at the facility. As of July 1994, production of calcium stearate continued to be in operation in Building Z at the Site. BAB000002, BAF000004, BAF000007

Subsequent remedial activities conducted at the western portion of the Site centered on the following efforts:

- Excavation of approximately 900 cubic yards of mercury contaminated soils and fill
- Excavation of chromium contaminated soils
- Building demolition work
- Asphalt paving as a cap of the western portion of the Site
- Establishment of a Deed Notice and Classification Exception Area (“CEA”)

BAF000010, BBA000004

Initial site investigation activities were reported to have been conducted in 1987 at the Site, during the tenure of MI Holdings, with a preliminary site characterization investigation that was performed for MI Holdings. The 1987 site investigation work focused on evaluating soil and groundwater conditions at the Site. BAF000004

This Site is listed within the NJDEP’s Known Contaminated Sites List (“KCS List”) as “MI Holdings,” 223 Westside Avenue, Jersey City, NJ, NJDEP Preferred ID # 000015. The Site is listed in the KCS List with an “active” status as of June 17, 1993. BAC000003B

Prior to November 1993, the western portion of the Site was undergoing remediation pursuant to an NJDEP “Voluntary Site Cleanup Program.” As of November 1993, manufacturing operations

were continuing on the western portion of the Site during its ongoing remediation. BAA000002, BAA000003, BAA000004, BAA000007

Concerning the “eastern portion” of the Site, MI Holdings was reported to have entered into a Memorandum of Agreement on October 20, 1992 (“10/1992 MOA”) with NJDEP. The 10/1992 MOA centered on the voluntary cleanup of mercury contamination in an Area of Concern (“AOC”) comprised of the eastern portion of the Site. NJDEP was reported to have issued a “No Further Action” letter dated May 17, 1993 (“05/1993 NFA Letter”) for the eastern portion of the Site. As of November 1993, the eastern portion of the Site was indicated as having been fully remediated. BAA000004, BAA000005, BAA000007, BAA000008

In November 1993, an Initial Notice and General Information Submission (“11/1993 GIS”) concerning the Site was filed with NJDEP by Woodward-Clyde Consultants on behalf of MI Holdings. Pursuant to the State of New Jersey Environmental Cleanup Responsibility Act, now known as the State of New Jersey Industrial Site Recovery Act (all referenced herein as “ISRA”), the 11/1993 GIS centered on the intended sale by MI Holdings of the eastern portion of the Site as of December 31, 1993, to the State of New Jersey Educational Facilities Authority. On December 15, 1993, NJDEP granted a “Certificate of Limited Conveyance” letter to MI Holdings granting the sale without a complete review as required under ISRA. BAA000002, BAA000003, BAA000004, BAA000009, BAA000010

The Site is also known as the “Hudson County Chromate Waste Site Number 184.” As of 1999, Allied Corporation (now Honeywell, Inc.) is listed as the Responsible Party for chromium contamination related cleanup activities at the Site. It subsequently was reported by NJDEP in 2005 that the Site (Number 184), along with the adjacent Baldwin Steel Site (Hudson County Chromate Waste Site Number 090), were both the subject of construction activities associated with expansion by New Jersey City University. It was reported at that time that remedial investigation and delineation activities had been completed, and that reports on same had been submitted to the NJDEP. Honeywell, New Jersey City University and the NJDEP were noted in 2005 as coordinating on the review and submittal of the final set of remedial investigation documents, in order that the construction activities for the expansion of the college facilities could proceed in an uninterrupted fashion. BAC000003, BAC000003A, BBA000001, BBA000003, BBA000004

According to the KCS List and relative to the New Jersey City University related site investigation, information on environmental conditions pertaining to the Site may also potentially be found under “NJ Jersey City State College Expansion,” Westside Avenue, Jersey City, NJ, NJDEP Preferred ID # 250168. The NJ Jersey City State College Expansion Site is listed in the KCS List with an “active” status as of October 2, 2003. BAC000003B

The Site and its surrounding area is being addressed as one of several sites in a multi-site, Hudson County Chromate waste clean-up designated as “Study Area 5.” Study Area 5 includes the following chromate waste sites:

- Baldwin Steel (NJDEP Site 090)
- M I Holdings (NJDEP Site 184)
- Portions of Former Morris Canal (NJDEP Site 153)

BBA000001, BBA000003, BBA000004

The portions of the former Morris Canal (NJDEP Site 153) are limited to those sections which abut the Baldwin Steel Site and the Mallinckrodt/MI Holdings Site. The Morris Canal was historically located in the late 1800s and early 1900s along the area now occupied by Route 440 to the north and northwest of the Mallinckrodt/MI Holdings Site. The canal was opened as of 1836 and filled with salt water. The portion of the canal that abuts Study Area 5 included tide locks at both ends to prevent water from flowing out of the canal during low tide. The canal was closed and drained as of 1924 and reportedly filled-in at that time. That area, after being filled-in, was utilized as a right-of-way for a sewage pipeline. BBA000001, BBA000003, BBA000004

The total area of Study Area 5 is indicated to comprise a total of 14 acres. The remedial investigation and evaluation of remedial action alternatives to address chromium contamination in Study Area 5 are indicated as being addressed by Honeywell International. Those activities are limited to that portion of Study Area 5 which has been proposed for redevelopment by New Jersey City University. BBA000001, BBA000000, BBA000004

#### **SOIL SAMPLING AND CONTAMINATION:**

As described earlier in this DEF, the overall Site is generally comprised of two portions, referred to as the east and west portions. BAF000007

##### **East Portion:**

Mercury contamination was found in soils in the eastern portion of the Site; the mercury contaminated soil was removed and disposed of off-site under a MOA with NJDEP in 1993. It had been reported that remedial activities at the Site included the excavation and removal of over 2,000 tons of mercury contaminated soils. The highest value measured for mercury in soils was 470 parts per million ("ppm"). BAA000008, BAF000003

Due to various remedial activities, the property has now been rezoned. As noted above, NJDEP issued a NFA Letter to MI Holdings for the eastern portion of the Site in 1993, prior to it subsequently being leased to Jersey City State College. BAA000004, BAA000005, BAA000008

In addition to the mercury contamination found in the eastern portions of the Site, the following hazardous substances were also found in soils at the levels indicated:

- Total Petroleum Hydrocarbons ("TPHCs") up to 10,050 ppm
- Ethyl benzene up to 120 parts per billion ("ppb")
- Total xylenes up to 810 ppb
- Methylene chloride up to 8 ppb
- 2-Propanone up to 1400 ppb

BAF000003, BAF000002

### **West Portion:**

Soils that were sampled at the western portions of the Site exhibited significant concentrations of the following contaminants at the levels indicated:

- Chromium up to 43,200 ppm
- Nickel up to 950 ppm
- Mercury up to 27,900 ppm

BAF000006, BAF000001, BAF00004, BAF000007

Soils along the south and west borders of the Site were found to be contaminated with chromium. Other Site contaminants in these areas are reported to have included:

- Arsenic
- Carbon tetrachloride
- Chloroform
- Dichloroethene ("DCE")
- Lead
- Mercury
- Methylene chloride
- Methyl tertiary butyl ether ("MTBE")
- Trichloroethylene ("TCE")
- 1,1,2,2-Tetrachloroethene ("PCE")
- Thallium

BAB000002, BAF000004, BAF000007

The most frequently detected volatile hydrocarbon compounds detected at the entire Site complex was TCE, chloroform, and carbon tetrachloride. Lesser concentration amounts were also found for PCE and 1,1-DCE. BAF000004

Relative to Site cleanup drivers, ongoing remedial investigation and clean-up activities at the Site appear to be centered on the cleanup of chromium contamination. BAF000005

### **GROUNDWATER SAMPLING AND CONTAMINATION:**

Groundwater samples taken from the eastern side of the Site revealed excessive concentrations of:

- VOCs
- TCE
- BNAs

- Chromium up to 1,450 ppm
- Arsenic up to 53.0 ppm
- Mercury up to 42.3 ppm

BAF000004

Groundwater samples taken from the western side of the Site revealed excessive concentrations of:

- Arsenic up to 53.0 ppb
- Cadmium up to 7.4 ppb
- Chromium (total) up to 1450 ppb
- Lead up to 46.7 ppb
- Mercury up to 42.3 ppb
- Thallium up to 15.3 ppb
- Methylene Chloride up to 99 ppb
- 1,2 Dichloroethene up to 560 ppb
- Vinyl chloride up to 24 ppb
- TCE up to 5,200 ppb
- Benzene up to 230 ppb
- Xylenes up to 220 ppb

BAF000007, BAF000001, BAF000004, BAB000002

Other contaminants detected in groundwater at lesser concentrations included:

- Toluene
- Ethylbenzene
- 1,1 Dichloroethene
- di-n-butylphthalate
- 1,2-Dichlorobenzene (United States Environmental Protection Agency {USEPA} Dioxin Precursor Chemical associated with the formation of dioxin)
- Phenol
- 4-Methylphenol
- Benzoic Acid
- Antimony
- Nickel
- Selenium

BAF000007, BAB000002

Groundwater flow at the Site travels in an east to west direction. Regionally, groundwater flow for Study Area 5, in general, is to the west and towards the Hackensack River. BAB000002, BAF000007, BBA000001

**PERMITS** (provide dates):

NJPDES:

No information is available at this time.

**NEXUS TO NEWARK BAY STUDY AREA** (describe in detail; cite to supporting documentation; date or time period of disposal; list CERCLA hazardous substances; and volume, if known):

Direct (e.g. pipe, outfall, spill):

The sewer system of the City of Jersey City, NJ, is comprised of combined sewers that are historically designed to comingle and convey both sanitary sewage and storm water flows. As detailed below, the sewer system was known to convey industrial wastewaters prior to construction of the City of Jersey City's sewage treatment plants. As detailed below, evidence obtained as of this report documents that, prior to construction of the City of Jersey City sewage treatment plants in 1957, any wastewaters collected in Jersey City (including wastewaters collected in the area of the Mallinckrodt/MI Holdings Site) historically were discharged as raw and untreated sewage to the waters surrounding the City of Jersey City. The sewers in the area of the Site are known to discharge to the Hackensack River and Newark Bay. BCJ000001, BCJ000002, BCJ000003, BCJ000007, BCJ000009, BCJ000022, BCJ000024, ISC000207

Information obtained to date indicates that Mallinckrodt commenced operating at the Site as of 1887. As such, Mallinckrodt operated at the Site for a time span of approximately 70 years (from 1887 to 1957) before the reported construction of the JCMUA West Side POTW plant that was reportedly constructed and placed in operation as of 1957. BAB000001, BAF000004

Evidence obtained from the City of Jersey City, dated as of and after 1996, documents that, at that time, MI Holdings was one of several industries located throughout Jersey City with industrial wastewater flows into the City of Jersey City sewer system. MI Holdings historically inherited the same operations, facilities and infrastructure that are known to have been in existence during the earlier operations of Mallinckrodt at the Site. BAB000001, BAF000004, BCJ000022, BCJ000024

Evidence concerning the occurrence of direct discharges from the Site to the NBSA is provided below for review:

1939

A historical survey of water pollution sources in the Jersey City and surrounding area was made by the United States Works Projects Administration as of 1939. In a figure entitled Shore Line Map, drawn and dated as of July 11, 1939 ("1939 Shore Line Map") various outfalls are indicated on the Jersey City shore line along Newark Bay and the Hackensack River. Specific to the area of the Mallinckrodt Site, an 8½-foot diameter (102-inches total) combined sewer outfall to the Hackensack River is indicated as being located immediately north of the foot of Fox Street in Jersey City. A second combined sewer outfall, indicated as being 5 feet

in diameter (60-inches total) is indicated as being located to the north of the Fox Street outfall and being situated at the foot of Culver Avenue in Jersey City. ISC000207

Fisk Street is not shown as being in existence at the time of the figure, as Fox Street is shown in that same area.

November 1943

In a November 1943 letter from the Interstate Sanitation District, it was noted that the City of Jersey City was one of several municipalities in the State of New Jersey that, at that time, was discharging untreated sewage or other polluting matter into the waters under the jurisdiction of the Interstate Sanitation Commission. BCJ000001

February 1949

A review was made of a report entitled Engineering Report, Pollution of the Waters of the Interstate Sanitation District by the City of Jersey City, dated February 23, 1949 ("1949 Engineering Report"). It was noted in the report that, at that time, *"the sewer system of the City of Jersey City is of the combined type and no sewage treatment is provided for any of its wastes."* The 1949 Engineering Report noted that all domestic sewage and industrial wastes are discharged, untreated and by gravity flow, through a multitude of outfalls into the various tidal waters surrounding the municipality; further noting that the discharge from Jersey City of *"sewage every day into adjoining tide water is hazardous and a menace to public health."* The discharges from Jersey City were noted in the 1949 Engineering Report as being made directly into the waters under the Jurisdiction of the Interstate Sanitation District, or indirectly into the waters of the Hackensack River, with the discharges noted as having a *"considerable polluttional effect"* on the receiving tidal waters. BCJ000002

Mallinckrodt was one of several industries listed in the 1949 Engineering Report as being "principal industries" located in Jersey City. BCJ000002

July 1949

The Interstate Sanitation Commission issued an order to the City of Jersey City, entitled as Order Concerning Discharge of Sewage or Other Polluting Matters from the City of Jersey City into the Waters of the Interstate Sanitation District ("1949 ISC Order") as of July 7, 1949. The 1949 ISC Order noted that all of the sewage discharged into the waters of the Interstate Sanitation District from Jersey City were not treated and did not have floatable solids removed prior to being discharged into the surrounding waters. The 1949 ISC Order directed the City of Jersey City to cease its

discharge of sewage and other polluting matter and to have its discharge treated as of January 1954. BCJ000003

The Site operations during this period from 1887 to 1957 were centered on the production of the following products, and as such wastewaters from these manufacturing operations were collected in the sewer system of the City of Jersey City which discharged, untreated, directly to Newark Bay/Hackensack River:

- Acetone (packaging)
- Alcohols (packaging)
- Analytical chemicals
- Benzene (packaging)
- Ethers (packaging)
- Inorganic chemicals
- Iron oxides and salts, including ferrous sulfate and ferric chloride
- Medicinal chemicals
- Mercury oxides and salts, including red mercuric oxide
- Mineral acids (packaging)
- Photographic chemicals
- Potassium chloride
- Potassium sulfate
- Sodium Nitrate
- Toluene (packaging)
- Uranium trioxide (World War II)
- Xylenes (packaging)
- Zinc acetate
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BAB000001, BAD000001, BAF000001, BAF000004, BAG000005, BAG000007

Acetone, benzene, inorganic chemicals (specifically metals), mercury, toluene, xylene, zinc and uranium (isotopes) are listed as CERCLA hazardous substances. BAC000028

Ongoing remedial investigation and cleanup activities associated with the nearby Honeywell Site include efforts by Honeywell to investigate contamination in the offshore sediments in the Hackensack River. The offshore sediment investigation centers on the sediments of the Hackensack River located both immediately offshore of the Honeywell Site, as well as in the vicinity of that site. Honeywell conducted sediment sampling to the north of the Honeywell Site, in the area of the City of Jersey City MUA West Side sewage treatment plant; as well as south of the Honeywell Site, in the area of Droyers Point in Jersey City, NJ. These two sediment investigation areas were designated by Honeywell as the Droyers Cove area and the area situated offshore of the JCMUA outfall. Sediment sampling was reportedly performed in these areas that were not directly offshore and adjacent to the Honeywell Site in order to delineate the physical and chemical characterization of the river sediments offshore of the Honeywell Site. Honeywell stated that the outfall from the Jersey City MUA West Side sewage treatment plant and the Fisk



Street CSO outfall were the historical sources of contaminants in the sediments north of the Honeywell Site and adjacent to the treatment plant. BAS000001, BAS000002

The sediment investigation by Honeywell included sampling of the sediments in the Reference Areas, including the sediments located offshore of the Jersey City MUA sewage treatment plant 54-inch outfall and the 102-inch outfall historically located at the foot of Fisk Street. In 2004, and again in 2005, Honeywell provided analytical results from its ongoing sediment investigation. However, it should be noted that the sediment sampling results that were provided by Honeywell for the Droyers Cove Area and the SA5 Groundwater Study Area adjacent to the Honeywell Site did not distinguish the specific location of the sample with the highest value of a given contaminant. BAS000001, BAS000002, ISC000207

The sediment sampling in these two areas, including but not limited to the area of the Jersey City MUA and the Fisk Street CSO outfall served to identify the following sediment contaminants at the levels indicated. These substances match hazardous substances known to have been historically stored, used, produced, generated and/or discharged by MI Holdings or its predecessors at the Jersey City Site:

- Antimony – 2.3 to 2.9 ppm
- Arsenic - 1.3 to 113 ppm
- Cadmium – 0.14 to 10.1 ppm
- Chromium - 3.9 to 33,500 ppm
- Lead - 2.1 to 520 ppm
- Mercury - 0.041 to 64 ppm
- Nickel - 1.6 to 120 ppm
- Selenium - 2.7 to 3.7 ppm
- Zinc - 14.2 to 842 ppm
- 4-Methylphenol - 8.8 to 280 ppm
- 1,2-Dichlorobenzene - 17 to 51 ppm

BAS000001, BAS000002, ISC000207

Sanitary Sewer (provide name and location of combined sewer overflow (“CSO”) outfalls; details regarding overflows and dates):

The sewer system of the City of Jersey City consists of trunk and collector sewers that, in turn, flow by gravity to the CSO regulators, outfalls, interceptor sewers and sewage treatment plants. The trunk and collector sewers are further organized into a series of tributary areas (basins and subdrainage basins) that transport wastewater flows in each given basin to specific CSO regulators and outfalls. It is reported that the regulators in the City of Jersey City system allow concentrated sanitary sewage to flow to the interceptors and treatment plants during dry weather, but limit storm water flow to the treatment plants by diverting storm water flows to the CSO outfalls. The City of Jersey City sewage treatment plants, one on the West Side of Jersey City, and the other on the East side of Jersey City, were constructed as of 1957. The plants and the associated interceptor systems are owned by the City of Jersey City and operated by the City of

Jersey City Sewerage Authority ("JCSA"). The interceptor sewers which serve the area of the Site direct wastewater flows to the City of Jersey City West Side Treatment Plant located at 555 Route 440, Jersey City, NJ. The West Side Treatment Plant is located to the west of, and across Route 440 from, the Site. The West Side Treatment Plant was indicated to be a "primary" treatment plant that utilized a 54-inch outfall to the Hackensack River. BCJ000007, BCJ000009, BCJ000022, BCJ000024

The City of Jersey City was first issued National Pollutant Discharge Elimination System ("NPDES") Permit to Discharge Number NJ0027022, effective February 28, 1975 ("02/28/1975 NPDES Permit") with an expiration date of June 30, 1977. That NPDES permit authorized the discharge from the West Site plant and thirteen overflow discharges to Newark Bay and the Hackensack River. The list of NPDES permitted discharge points included Discharge Number 002 for the West Side sewage treatment plant's outfall line. BCJ000008

In a report entitled "Hudson County Utilities Authority, 201 Wastewater Facilities Plan, Planning Area I, Volume One, Facility Report," dated January 1979 ("1979 Wastewater Facilities Plan"), it was noted that the West Side plant was a primary treatment plant with a design capacity of 36 Million Gallons per Day ("MGD"). The West Side plant, noted as being served by a combined sewer collection system, was indicated in the 1979 report as discharging to the Hackensack River. It was noted at that time that the combined sewer system was designed to bypass excessive stormwater flows from the intercepting sewers to the receiving waters during periods of heavy rainfall. It was noted by NJDEP in November 1985 that the Jersey City West Side plant was presently treating 19.4 MGD of wastewater. BCJ000009, BCJ000012, BCJ000012A

The area of the Site is located within a sewer subdrainage basin which discharges via a CSO outfall located at the foot of Fisk Street in Jersey City, NJ. The original 02/28/1975 NPDES indicated that Discharge Number 015, identified as the "Fisk Street Regulator", as discharging into the Hackensack River. The 1979 Wastewater Facilities Plan describes the sewers associated with the Jersey City collection system as being 50 or more years old. The report identified the outfall at Fisk Street as Regulator Number RW10. The 1979 Wastewater Facilities Plan indicated that the RW10 regulator was fed by a 102-inch combined sewer which, in turn, had a 108-inch outfall to the Hackensack River. BCJ000008, BCJ000009, BCJ000022, BCJ000024

The following annotated aerial photograph identifies the approximate location of the Site within the Regulator Number 7 discharge basin (with its associated NJPDES Outfall Number 10) in Bayonne, New Jersey:



**Mallinckrodt/MI Holdings Site  
including City of Jersey City Subdrainage Basin Number RW10 and CSO Outfall # 010  
Jersey City, Hudson County, New Jersey**

Aerial Photograph Copyright Dated 2008  
Photo Source: Google Earth (Tele Atlas/Sanborn/Europa Technologies/Digital Globe)

Drainage basin outline, Site boundary and CSO outfall locations are approximations

BAA000006, BAF000003, BCJ000022

Information obtained to-date indicates construction of the 96-inch CSO line at Fisk Street as having occurred in the 1950s. During more recent construction activities associated with the Fisk Street outfall, NJDEP issued an NJPDES Emergency Groundwater Action Permit # NJ8000221, issued/effective June 17, 2003, with an expiration date of June 17, 2004. The permit authorized "spray irrigation" measures relative to construction activities at the Fisk Street outfall. BAF000018, BAF000020

Effective March 19, 1990, the City of Jersey City Sewerage Authority (JCSA") took over ownership of the Jersey City wastewater collection system from the City of Jersey City. As of December 1990, the JCSA sewage treatment plants had ceased their discharges and began operating as primary treatment pumping facilities tied into the PVSC system. It was noted in a December 31, 1990, letter that the combined sewer overflows in the JCSA system would continue to discharge as permitted. BCJ000020, BJC000021

A JCSA report entitled "Draft Combined Sewer Overflow Discharge Characterization Study, Part B – Service Area Drainage and Land Use Report," dated July 1996 ("1996 Drainage/Land Use report") detailed the drainage areas and subdrainage basins associated with each of the CSOs located within Jersey City. Subdrainage Basin # RW10 was indicated as discharging via permitted CSO Outfall # 10 to the Hackensack River at Fisk Street. BCJ000008, BCJ000009, BCJ000022, BCJ000024

As of the 1996 Drainage/Land Use report, MI Holdings was listed as one of 26 Significant Industrial Users ("SIUs") located in the JCSA system. It was noted that MI Holdings discharged an estimated daily flow of 5200 Gallons per Day ("GPD") of industrial wastewater into the JCSA system. BCJ000022

Effective February 1, 1998, the JCSA was reorganized by the City of Jersey City and became known as the Jersey City Municipal Utilities Authority ("JCMUA"). BCJ000023

Wastewaters collected from the area of the Site were discharged to the Hackensack River/NBSA during the following events: (1) Historical overflows from the Fisk Street regulator and CSO outfall; and (2) Bypass events at the West Side Treatment Plant. Evidence concerning these historical discharges is provided below for review.

1958 – 1961

A June 17, 1960 memorandum from the State of New Jersey Department of Health ("NJDOH") concerned inspections made on June 14, 1960 at both Jersey City sewage treatment plants. The June 1960 inspections were made as a follow-up to early plant inspections that had been previously made in May 1959. It was noted in the NJDOH memorandum that conditions at the plants had deteriorated at the plants as of the June 1960 inspections; specifically noting that only one of the five (5) settling tanks at the West Side plant was in service at the time of the inspection; while the other four (4) settling tanks were either "*full of stored sludge or with broken mechanical parts, rendering them useless for settling*"



*purposes.” During the June 1960 inspection, it was observed at the West Side plant that tanks number 4 and 5 at the plant were loaded with sludges containing blue dye solids. It was further noted that no sludge had been filtered or removed for a period of two years from sludge digesters at the West Side plant. The sludge in the “second stage” digesters was maintained in a liquid consistency with much of the sludge overflowing as a supernatant liquor such that no filterable solids can be withdrawn. It was noted in the June 1960 NJDOH memorandum that, until the restoration of adequate settling capacity and a solution to the sludge handling problems at the West Side plant, “one of the West Side sewer intercepting chambers has been closed off and all sewage from that point is being bypassed to Newark Bay.” The memorandum noted that it was evident, at that time, that “the Jersey City treatment plants are performing very little of their function are not likely to perform successfully in the near future.” In a December 1960 newspaper article, it was noted that the neglect and difficulties in the operation of the plants had been brought to the attention of the JCSA as early as 1958. A March 1961 newspaper article made reference to a report on the operation of the Jersey City sewage system that was prepared for the City of Jersey City. The March 1961 newspaper article noted the report as detailing that the City of Jersey City had not properly maintained its system and that neither the interceptor system nor the treatment plants had been properly operated or maintained. BCJ000005, BCJ000006, BCJ000007*

April 1983

Due to a power failure at the West Side plant on April 27, 1983, raw sewage was noted as being stored in the interceptors, with the “possibility” of some overflows from the regulators. BCJ000010

March 1986

In March 1986, the United States Department of Justice, (“USDOJ”) filed a lawsuit alleging violations of the federal Clean Water Act (“CWA”) against the State of New Jersey and five sewage treatment systems, including that of the City of Jersey City. The suit was filed by the USDOJ on behalf of the United States Environmental Protection Agency (“USEPA”) and alleged that the named sewage treatment plants and systems, including the plants of the City of Jersey City, failed to meet CWA requirements for the removal of 85% of pollutants from wastewaters processed at the treatment plants and for discharging of excess pollutants into the receiving waterways. BCJ000011, BCJ000015

July 1986

The JCSA reportedly signed an Amended Administrative Order on July 24, 1986 that, in part, calls for connection of the West Side plant to the Passaic Valley Sewerage Commissioners (“PVSC”) treatment plant in Newark, NJ. BCJ000014

1986 – 1987

NJDEP conducted facility inspections at the West Side plant on October 23, 1986, and again on September 16, 1987. During both facility inspections, it was noted that the West Side plant was a primary treatment plant which could not obtain secondary effluent limitations required as a special condition of its NJPDES [State of New Jersey Pollutant Discharge Elimination System] discharge permit. BCJ000013, BCJ000014

May 1988

A Consent Decree entered into among the USDOJ, the ISC, the City of Jersey City, and certain other sewage treatment plant systems was filed on May 31, 1988. The Consent Decree resulted from the USDOJ suit filed in March 1986. It was detailed in the Consent Decree that the City of Jersey City would continue to construct the pipelines, pumping stations and other infrastructure required to divert its sewage flow to the PVSC plant. The Consent Decree stipulated that the City of Jersey City was to permanently cease all discharges from its East Side and West Side plants, and divert those flows to PVSC, on or before December 31, 1988. BCJ000015

July 1988 - September 1988

Newspaper sources reported that officials of the Health Department of the City of Jersey City suspected outfalls from Jersey City were discharging raw sewage to the Hudson and Hackensack Rivers. It was reported that the raw sewage discharges were believed to be occurring on a regular basis, and not only on rainy days, due to a deteriorating combined wastewater sewer system. It was noted in the newspaper article that City of Jersey City officials had been aware of the problem for a long time and that “*the discharge problem was as bad in 1970*” as it was at the time of the 1988 article. It was noted that the two Jersey City sewage treatment plants were removing only 30% of the pollutants passing through its system, and that “most of the outfall pipes were releasing highly polluted raw sewage into the surrounding rivers. BCJ000016, BCJ000017, BCJ000018

MI Holdings and/or its predecessors were in operation at the Site during the period from (without limitation) 1957 to late 1993. As detailed above, wastewaters from the manufacturing operations at the Site for the following products have been discharged from the Site to Newark Bay/Hackensack River during regulator overflow events and/or during bypassing events at the West Side Treatment Plant:

- Acetone (packaging)
- Alcohols (packaging)
- Benzene (packaging)
- Calcium stearate dispersions

- Diagnostic chemicals
- Ethers (packaging)
- Food preservatives
- Inorganic chemicals
- Iron oxides and salts, including ferrous sulfate and ferric chloride
- Mercury oxides and salts, including red mercuric oxide
- Mineral acids (packaging)
- Potassium chloride
- Potassium sulfate
- Sodium Nitrate
- Surfactants
- Toluene (packaging)
- Xylenes (packaging)
- Zinc acetate
- Zinc stearate dispersions

BAB000001, BAD000001, BAF000001, BAF000004, BAG000005, BAG000007

Acetone, benzene, mercury, toluene, xylene, zinc and uranium (isotopes) are listed as CERCLA hazardous substances. BAC000028

As discussed above, sampling of sediments in the Hackensack River was performed by Honeywell in connection with its investigative activities relative to the Honeywell Site. This sediment sampling included certain offshore areas in the Hackensack River that included but was not limited to the area of the JCMUA and the Fisk Street CSO outfall. This sediment sampling served to identify the following sediment contaminants, hazardous substances that match some of the hazardous substances known to have been historically stored, used, produced, generated and/or discharged by MI Holdings or its predecessors at the Jersey City Site:

- |                         |                   |
|-------------------------|-------------------|
| • Antimony –            | 2.3 to 2.9 ppm    |
| • Arsenic -             | 1.3 to 113 ppm    |
| • Cadmium –             | 0.14 to 10.1 ppm  |
| • Chromium -            | 3.9 to 33,500 ppm |
| • Lead -                | 2.1 to 520 ppm    |
| • Mercury -             | 0.041 to 64 ppm   |
| • Nickel -              | 1.6 to 120 ppm    |
| • Selenium -            | 2.7 to 3.7 ppm    |
| • Zinc -                | 14.2 to 842 ppm   |
| • 4-Methylphenol -      | 8.8 to 280 ppm    |
| • 1,2-Dichlorobenzene - | 17 to 51 ppm      |

BAB000001, BAD000001, BAF000001, BAF000004, BAG000005, BAG000007, BAS000001, BAS000002, ISC000207

### Storm Sewer:

Stormwater from the area of the Site collected in storm drains tied to the City of Jersey City's combined sewer system. BBA000001, BBA000003, BBA000004

See above discussion concerning direct discharges to the Hackensack River/Newark Bay from combined sewers in the area of the Site that occurred prior to 1957. Also see discussion of discharges that occurred to the Hackensack River/Newark Bay after 1957 from regulators serving the Site and/or from the discharge of wastewaters collected from the area of the Site that occurred during bypass events at the West Side Treatment Plant.

### Runoff:

No information is available at this time.

### Groundwater:

Groundwater flow at the Site travels in an east to west direction. Regionally, groundwater flow for Study Area 5 is, in general, to the west and towards the Hackensack River. BAB000002, BAF000007, BBA000001

Historical sampling of Site groundwater has served to document the presence of the following contaminants at levels indicated where known:

- 1,1Dichloroethene
- 1,2 Dichloroethene up to 560 ppb
- 1,2-Dichlorobenzene
- 4-Methylphenol
- Antimony
- Arsenic
- Arsenic up to 53.0 ppb
- Benzene up to 230 ppb
- Benzoic Acid
- BNAs
- Cadmium up to 7.4 ppb
- Chromium
- Chromium (total) up to 1450 ppb
- di-n-butylphthalate
- Ethylbenzene
- Lead up to 46.7 ppb
- Mercury
- Mercury up to 42.3 ppb
- Methylene chloride up to 99 ppb
- Nickel
- Phenol



- Selenium
- TCE
- TCE up to 5200 ppb
- Thallium up to 15.3 ppb
- Toluene
- Vinyl chloride up to 24 ppb
- VOCs
- Xylenes up to 220 ppb

BAF000004, BAF000007, BAF000001, BAF000004, BAB000002

**POTENTIAL NEXUS TO NEWARK BAY STUDY AREA** (describe in detail; cite to supporting documentation; list CERCLA hazardous substances; and volume, if known):

Direct (e.g. pipe, outfall, spill):

See above discussion for documented direct discharges to the Hackensack River/Newark Bay of wastewaters collected from the Site prior to construction of the West Side Treatment Plant in 1957.

Sanitary Sewer (provide name and location of combined sewer outfall ("CSO"); details regarding CSO overflows and dates):

See above discussion for documented discharges that occurred to the Hackensack River/Newark Bay after 1957 from regulators serving the Site and/or from the discharge of wastewaters collected from the area of the Site during bypassing events at the West Side Treatment Plant.

Storm Sewer (provide name and location of CSO; details regarding CSO overflows and dates):

See above discussion concerning documented direct discharges to the Hackensack River/Newark Bay of Site stormwaters that occurred prior to 1957; and for documented discharges of stormwaters collected in the combined sewers via regulator overflows and/or sewage treatment plant bypassing that occurred after 1957.

Runoff:

As discussed above, a portion of the Morris Canal abutted the Mallinckrodt/MI Holdings Site and Study Area 5 west of the Site. The Morris Canal was located along the area now occupied by Route 440 to the north and northwest of the Mallinckrodt/M. I. Holdings Site. The canal was opened as of 1836 and filled with salt water. The portion of the canal that abuts Study Area 5 included tide locks at both ends to prevent water from flowing out of the canal during low tide. The canal was closed, drained as of 1924 and reportedly filled-in at that time. That area, after being filled-in, was utilized as a right-of-way for a sewage pipeline. BBA000001, BBA000003, BBA000004

The potential exists that historical surface run-off from the Site, from the commencement of Site operations in 1887 until the canal was closed in 1924, was conveyed to Newark Bay and the Hackensack River via the Morris Canal.

Groundwater:

See above discussion for documented discharges of Site groundwater which flows to the Hackensack River/Newark Bay.

**REFERENCES**

<b>TAB NO.</b>	<b>BATES NO.</b>	<b>DATE</b>	<b>DESCRIPTION</b>
1.	BAA000001	2/3/94	ECRA/ISRA Case Management Sheet
2.	BAA000002	11/11/93	Letter from Woodward-Clyde to NJDEP re: Initial Notice/General Information Submission for M.I. Holdings, Inc.
3.	BAA000003	11/11/93	M.I. Holdings, Inc. ECRA Initial Notice of General Information Submission (GIS). Attached is the NJDEP Administrative Checklist for the GIS
4.	BAA000004	11/10/93	Letter from M.I. Holdings, Inc. to NJDEP re: Application for Area of Concern Waiver. Mercury contamination was detected and remediated
5.	BAA000005	5/17/93	Letter from NJDEP to M.I Holdings, Inc. re: Soil Remediation of Eastern portion of Site located at 223 West Side Ave., Jersey City & DEP issuing a No Further Action of AOC
6.	BAA000006	8/4/93	M.I. Holdings Facility Plan (Map prepared by Woodward-Clyde Consultants)
7.	BAA000007	7/6/93	Letter from NJDEP to M.I. Holdings, Inc. re: Memorandum of Agreement
8.	BAA000008	6/17/1993	Letter from M.I. Holdings, Inc. to NJDEP re: Voluntary Site Remediation Program at the M.I. Holdings Site.
9.	BAA000009	12/15/1993	Letter from NJDEP to M.I. Holdings, Inc. re: Approval for Sale of property

TAB NO.	BATES NO.	DATE	DESCRIPTION
10.	BAA000010	2/4/1994	Letter from NJDEP to W. Fred Robinson re: determination that M.I. Holding Inc. not subject to provisions of ISRA
11.	BAB000001	12/1/92	Excerpts of the Proposed Sampling Plan - Preliminary Assessment/Site Investigation, Western Portion of Facility - Volume 2 of 2 – M.I Holdings, Inc.
12.	BAB000002	11/17/93	Letter from NJDEP to Woodward-Clyde Consultants re: Soil to Groundwater Remedial Investigation/Actions at M.I. Holdings and site contamination issues.
13.	BAC000003	June 1999	NJDEP Site Remediation & Waste Management - Hudson County Chrome Update
14.	BAC000003A	NA	Memo from NJDEP to Hudson County Chromate Waste Sites Mailing List re: Hudson County Chromate Update #32
15.	BAC000003B	2/27/08	NJDEP Site Remediation & Waste Management - Hudson County (Part 2 of 3): Jersey City
16.	BAC000004	10/26/2007	The Uranium Story – Mallinckrodt Chemical Works – The First Fifty Critical Days, by John Ruhoff, as told to Pat Fain
17.	BAC000005	10/26/07	Website: <a href="http://www.mallinckrodt.com">www.mallinckrodt.com</a> – “Welcome to Mallinckrodt”
18.	BAC000006	10/29/07	Mallinckrodt Inc. information & related industry information from Hoover’s.
19.	BAC000009	10/29/07	Website: <a href="http://investor.covidien.com">investor.covidien.com</a> – Covidien/Investor Relations – News Release: “Global Healthcare Leader Covidien Separates from Tyco International; Company to Debut on New York Stock Exchange.
20.	BAC000010	08/10/07	Securities & Exchange Commission (SEC) Form 10-Q: Covidien Ltd. – COV, quarterly report.
21.	BAC000012	12/2006	Avon Products, Inc. SEC Form 10-K Exhibit 21 - Subsidiaries listing.

<b>TAB NO.</b>	<b>BATES NO.</b>	<b>DATE</b>	<b>DESCRIPTION</b>
22.	BAC000013	10/29/07	Website: Answers.com - Hoover's Profile for Avon Products, Inc.
23.	BAC000021	2/27/08	NJ Business Entity Status Reports – MI Holdings, Inc.
24.	BAC000022	2/27/08	Forbes Business Visionaries on Gilbert L Klemann II
25.	BAC000023	2/27/08	United States Securities & Exchange Commission – Avon Products, Inc.
26.	BAC000023A	2/27/08	Archives re:Avon Products, Inc. and Subsidiaries
27.	BAC000024	2/27/08	Business Entity re: Missouri Secretary of State, Robin Carnahan
28.	BAC000024A	12/14/81	Articles of Incorporation of AVP Holdings, Inc.
29.	BAC000025	3/8/82	State of Missouri... Office of Secretary of State, Articles of Merger between Mallinckrodt, Inc. & AVP Holdings, Inc.
30.	BAC000026	2/2/86	Amendment of Articles of Incorporation
31.	BAC000027	4/30/07	2007 Annual Registration Report for MI Holdings, Inc.
32.	BAC000028	2/14/2008	Electronic Code of Federal Regulations - Title 40: Protection of Environment
33.	BAC000031	2/28/08	Missouri Secretary of State re: Business Entity Search – Mallinckrodt Chemical, Inc., Mallinckrodt Specialty Chemical Company
34.	BAC000032	12/11/98	State of Delaware – Office of the Secretary of State re: Certification of the merger between Mallinckrodt Chemical Inc. with Mallinckrodt Inc. into Mallinckrodt Inc.
35.	BAC000034	2/28/08	Missouri Secretary of State re: Business Entity Search – Mallinckrodt Inc., A Delaware Corporation, Mallinckrodt Inc., & Mallinckrodt Medical, Inc.

TAB NO.	BATES NO.	DATE	DESCRIPTION
36.	BAC000035	4/17/89	State of Missouri... Office of Secretary of State – Application for Foreign Corporation for a Certificate of Authority to Transact Business in Missouri
37.	BAC000038	12/23/98	State of Missouri re: Application for an Amended Certificate of Authority for a Foreign Corporation
38.	BAC000041	1/31/08	2007 Annual Registration Report for Mallinckrodt Inc.
39.	BAC000043A	3/3/08	Missouri Secretary of State re: Business Entity Search for Imcera Group Inc.
40.	BAD000001	09/20/46	Jackson v. Mallinckrodt Chemical Works re: Mercurial poisoning
41.	BAF000001	12/10/87	Preliminary Site Characterization – M.I. Holdings' Jersey City Facility – Volume 1, prepared by AWD Technologies, Inc. – Document No. 5 marked “Confidential Business Information”
42.	BAF000002	07/08/88	Underground Storage Tank Removal, M. I. Holdings, Jersey City Facility – prepared by AWD Technologies – Document No. 6 marked “Confidential Business Information”
43.	BAF000003	05/11/90	Soil Investigation & Characterization Report, Eastern Portion of Facility – Volume 1 of 2, prepared by AWD Technologies – Document No. 3 marked “Confidential Business Information”
44.	BAF000004	12/01/92	Results of Phase II Investigations, M.I. Holdings, Jersey City Facility – drafted by AWD Technologies, Inc. – Document No. 4 marked “Confidential Business Information”
45.	BAF000005	06/09/93	Letter from Woodward-Clyde Consultants to NJDEPE re: Summary Report on Results of Chromium Investigations.
46.	BAF000006	08/19/93	Letter from New Jersey Department of Health to M.I. Holdings, Inc. re: Preliminary survey to identify & evaluate the potential for chromium contamination; survey report attached

TAB NO.	BATES NO.	DATE	DESCRIPTION
47.	BAF000007	08/30/93	Site Investigation & Remedial Actions Report – Western Portion of Facility. Prepared by Woodward-Clyde Consultants – “Confidential Business Information”
48.	BAF000010	11/30/94	Volume 1 of 4, Supplemental Report – Soil Investigation & Remedial Actions – Western Portion of Facility, prepared by Woodward-Clyde Consultants “Confidential Business Information”
49.	BAF000018	05/23/03	Mayo, Lynch & Associates Inc., Office memo re: Formulate a plan to allow Cruz Construction to return to work
50.	BAF000020	06/17/03	Letter from NJDEP to Honeywell International Inc., re: NJ Pollutant Discharge Elimination System / Discharge to Ground water permit
51.	BAG000003	10/13/54	NY Times article re: AEC to expand uranium program – project to include Mallinckrodt.
52.	BAG000005	04/07/56	NY Times article entitled: “Spring Cleaning Time Is Near, Rise in Moth Ball Sales Shows” by Alexander R. Hammer.
53.	BAG000006	10/17/56	NY Times article re: Mallinckrodt produces atomic plant fuel
54.	BAG000007	11/21/56	NY Times article re: proposal for uranium job
55.	BAG000009	01/07/59	NY Times article re: Mallinckrodt forms wholly owned subsidiary called Mallinckrodt Nuclear Corporation
56.	BAG000024	12/01/49	NY Times article – Sale of uranium allowed by A.E.C. and sold by Mallinckrodt.
57.	BAG000025	12/29/49	NY Times article – Nine chemical concerns listed to market metal with 8 new industry licenses issued – Mallinckrodt included
58.	BAG000030	07/24/65	NY Times article – Corporations Issue Earnings Statistics

<b>TAB NO.</b>	<b>BATES NO.</b>	<b>DATE</b>	<b>DESCRIPTION</b>
59.	BAG000033	09/08/65	NY Times article – Display Ad # 68 which includes one for Mallinckrodt Chemical Works & 5% Convertible Subordinated Debentures Due July 1, 1974
60.	BAG000044	04/22/70	NY Times article – Companies issue Earnings Figures
61.	BAG000052	03/24/90	NY Times article – Mountain of Nuclear Waste splits St. Louis and suburbs
62.	BAG000054	07/12/70	NY Times article – Amex and Counter stocks halt slide
63.	BAS000001	4/29/04	Offshore Investigation – Results Summary Report – Oct 2003 to Jan 2004 Activities, Study Area 7, Jersey City, NJ prepared for Honeywell International, Inc. by Parsons
64.	BAS000002	10/14/05	Offshore Sediment Investigation Report – June 2003 to August 2005 Activities – Study Area 7, Jersey City, NJ prepared for Honeywell International, Inc. by Environ International Corp.
65.	BBA000001	02/2006	Draft – Supplemental Remedial Investigation Report/Remedial Action Selection Report/Remedial Action Work Plan / Study Area 5 prepared by Mactec
66.	BBA000003	02/2006	New Jersey City University – Final Remedial Investigation Report/Remedial Action Work Plan prepared by Tetra Tech EC, Inc.
67.	BBA000004	06/2007	Supplemental Remedial Investigation Report / Remedial Action Selection Report / Remedial Action Work Plan – Study Area 5. Prepared by Mactec
68.	BBS000001	1979	EDR Sanborn Map of Jersey City Streets. Area of Mallinckrodt Site.
69.	BBS000002	1988	EDR Sanborn Map of Jersey City Streets. Area of Mallinckrodt Site.
70.	BCJ000001	11/1943	Letter from Seth Hess, Director & Chief Engineer to Walter Darby, Commissioner of Local Government re: Pollution in the Interstate Sanitation District

TAB NO.	BATES NO.	DATE	DESCRIPTION
71.	BCJ000002	2/23/1949	Engineering Report on Pollution of the Waters of the Interstate Sanitation District by the City of Jersey City submitted for J.C. Hiaring
72.	BCJ000003	7/7/1949	Interstate Sanitation Commission – Order Concerning Discharge of Sewage Or Other Polluting Matters from the City Of Jersey City into the Waters of the Interstate Sanitation District
73.	BCJ000005	6/17/60	Memo from Harry Hughes to Robert Shaw re: Jersey City Disposal Plants
74.	BCJ000006	12/7/1960	The Jersey Journal and Jersey Observer article – Sewage Authority Warned on Neglect Two Years Ago
75.	BCJ000007	3/30/1961	E.N.R. article – New Sewage Plants in Sad Shape
76.	BCJ000008	2/28/1975	Permit No. NJ0027022, National Pollutant Discharge Elimination System – Permit to Discharge
77.	BCJ000009	Jan 1979	Hudson County Utilities Authority – 201 Wastewater Facilities Plan – Planning Area I – Volume One, Facility Report by Havens and Emerson, Inc. – Hazen and Sawyer
78.	BCJ000010	4/28/1983	Letter from Jersey City Sewerage Authority to NJDEP & USEPA re: Overflow of raw sewerage due to a power failure
79.	BCJ000011	3/21/1986	Article – Federal suit says Jersey and 5 cities are polluting Kill
80.	BCJ000012	11/13/1985	NJDEP Public Notice proposing the restriction to discharge pollutants from Jersey City Sewerage Authority
81.	BCJ000012A	5/12/86	NJDEP Public Notice given to restrict discharge pollutants
82.	BCJ000013	1/23/1987	Letter from NJDEP to Jersey City Sewerage Authority re: Compliance Evaluation Inspection
83.	BCJ000014	12/31/1987	Letter from NJDEP to Jersey City Sewerage Authority re: Compliance Evaluation Inspection



TAB NO.	BATES NO.	DATE	DESCRIPTION
84.	BCJ000015	5/31/1988	Interstate Sanitation Commission v. City of Hoboken, <u>et al.</u>
85.	BCJ000016	7/18/1988	Hudson Dispatch article – Mystery sewage probe is launched: Jersey City outfalls are the subject
86.	BCJ000017	7/29/1988	The Star-Ledger article – Hudson inspection tour highlights sewage system improvements
87.	BCJ000018	9/30/1988	The Hudson Dispatch – Waste fouls Rivers, Study: Outfalls releasing untreated sewage
88.	BCJ000022	July 1996	The Jersey City Sewerage Authority – Draft, Combined Sewer Overflow Discharge Characterization Study – Part B, Service Area Drainage and Land Use Report by Malcolm Pirnie, Inc. with figures
89.	BCJ000023	2/28/1998	Letter from Jersey City Municipal Utilities Authority to NJDEP re: Jersey City Sewerage Authority – Reorganization & Name Change
90.	BCJ000024	June 2003	Combined Sewer Overflow Discharge Characterization Study – JCMUA Combined Sewer System Monitoring Program, Supplemental Proposal & Work Plan by Malcolm Pirnie, Inc.
91.	ISC000207	9/21/1939	Water Pollution Survey – Shore Line Map
92.	BAG000055	11/17/1974	NY Times news article. Ideas and Trends. Extract in re “In Search of New Poppies.”
93.	BAG000056	11/17/1974	NY Times news article. In re “Westvaco Net Off 54% in Quarter; Other Companies List Earnings Results.”